MERCK SHARP & DOHME
RESEARCH LABORATORIES
LIBRARY, WEST POINT, PA.

AMERICAN CHEMICAL JOURNAL

EDITED BY

IRA REMSEN

PRESIDENT OF THE JOHNS HOPKINS UNIVERSITY

VOL. XLII.—JULY–DECEMBER, 1909.

BALTIMORE: THE EDITOR.

ESCHENBACH PRINTING COMPANY, PRINTERS,
EASTON, PA.

Contents of Vol. XLII.

No. 1.

THE OXYGEN ETHERS OF THE DIALKYLUREAS. By Ralph H. McKee. 1

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

CLXVII.—*Researches on Pyrimidines: The Preparation of 3-Methyl- and 3-Benzyluracil.* By Henry L. Wheeler and Treat B. Johnson 30

CONDUCTIVITY AND VISCOSITY IN MIXED SOLVENTS CONTAINING GLYCEROL. By M. R. Schmidt and Harry C. Jones . . . 37

REVIEWS.

Die Lagerung der Atome im Raume 95
The Elements of Physical Chemistry 96
Qualitative Analyse vom Standpunkte der Ionenlehre . . . 97
General Chemistry for Colleges 98
A Text-Book of Botany and Pharmacognosy 98
Principles and Practice of Agricultural Analysis 99

No. 2.

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

CLXVIII.—*Researches on Pyrimidines: The Preparation of 1,4-Dimethyluracil and of the Monobenzyl Derivatives of 4-Methyluracil.* By Henry L. Wheeler and David F. McFarland 101

ON THE THEORY OF INDICATORS AND THE REACTIONS OF PHTHALEINS AND THEIR SALTS. By S. F. Acree and E. A. Slagle . . 115

EXPERIMENTS ON THE RADIOACTIVITY OF ERBIUM, POTASSIUM AND RUBIDIUM COMPOUNDS. By W. W. Strong 147

PRODUCTION OF CARBON DIOXIDE FROM SOLUTIONS OF COMPOUNDS OF SILICON, ZIRCONIUM, BISMUTH, AND THORIUM. By Sir William Ramsay 150

REPORT.

Relation between Crystalline Form and Chemical Constitution . 158

REVIEWS.

Exercises in Practical Physiological Chemistry 179
Untersuchung und Nachweis organischer Farbstoffe auf spektroskopischem Wege 180
Ion 181
Elektrolytische Zähler 182

No. 3.

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF CORNELL UNIVERSITY:

Tetrachlorgallein and Some of Its Derivatives. By W. R. Orndorff and T. G. Delbridge 183

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

CLXIX.—*Researches on Pyrimidines. Sulphur Derivatives of 5-Hydroxyuracil: Preparation of 5-Benzylmercaptouracil and 5-Benzylmercaptocytosine.* By Treat B. Johnson and Herbert H. Guest 271

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF HARVARD COLLEGE:

A Modification of Scheibler's Extractor for Use with Large Quantities of a Solid. By C. Loring Jackson and Latham Clarke 287

REVIEWS.

Die neueren Fortschritte auf dem Gebiete der Radioaktivität (von Anfang 1906 bis Mitte 1908) 291

Die englischen elektrochemischen Patente 291

Grundriss der allgemeinen Chemie 291

Die edlen und die radioaktiven Gase 292

No. 4.

FROM THE DIVISION OF CHEMISTRY, HYGIENIC LABORATORY, U. S. PUBLIC HEALTH AND MARINE HOSPITAL SERVICE, WASHINGTON, D. C.:

On the Decomposition of the Leucosulphonic Acids of Rosaniline Hydrochloride and Crystal-Violet in Aqueous Solution. By J. H. Kastle 293

CONTRIBUTION FROM KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO:

On the Action of Fehling's Solution on Malt Sugar. By W. Lee Lewis 301

UREIDES AND CYANAMIDES OF THE OXYFATTY ACIDS. By Erik Clemmensen and Arnold H. C. Heitman 319

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

CLXX.—*Researches on Amines: Synthesis of Methylphenylethylamine.* By Treat B. Johnson and Herbert H. Guest 340

CLXXI.—*Researches on Pyrimidines: Dimethyl Derivatives of 2-Aminopyrimidine. Preparation of 2-Methylamino-5-Methylpyrimidine.* By Treat B. Johnson and Kenneth G. Mackenzie 353

REVIEWS.

Jahrbuch der Chemie 370
Kurzes Lehrbuch der organischen Chemie 371
Neuere theoretische Anschauungen auf dem Gebiete der organischen Chemie 372
Anleitung für das organisch-präparative Prakticum . . . 373
Quantitative Experiments in General Chemistry 373
Gesättigte Salzlösungen von Standpunkt der Phasenlehre . . 374
Meat and Food Inspection 374
Errata 374

No. 5.

VINYLPHENYL KETONE AND SOME OF ITS HOMOLOGUES. By. E. P. Kohler 375
CONTRIBUTION FROM THE KENT CHEMICAL LABORATORY OF THE UNIVERSITY OF CHICAGO:
On the Action of Fehling's Solution on Galactose. By Ernest Anderson 401
CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:
CLXXII.—*Researches on Pyrimidines: The Action of Methyl Iodide and of Benzyl Chloride upon 2-Oxy-4-Methyl-6-Methylmercaptopyrimidine.* By Henry L. Wheeler and David F. McFarland 431
CLXXIII.—*Researches on Halogen Amino Acids: Iodine Derivatives of Paratoluidine; 3,5-Diiod-4-aminobenzoic Acid.* By Henry L. Wheeler and Leonard M. Liddle. 441
LEAD SILICATES: THERMAL ANALYSIS OF THE SYSTEM PbO–SiO_2. By H. C. Cooper, L. I. Shaw and N. E. Loomis 461

OBITUARY.

Samuel William Johnson 474

REVIEWS.

Die chemische Industrie 475
A Course in Inorganic Chemistry for Colleges 475
An Intermediate Course of Laboratory Work in Chemistry . . 476
Tables of Properties of Over Fifteen Hundred Common Inorganic Substances 476

No. 6.

THE OXIDATION OF HYDROXY DERIVATIVES OF BENZALDEHYDE, ACETOPHENONE AND RELATED SUBSTANCES. By H. D. Dakin . 477

CONTRIBUTIONS FROM THE SHEFFIELD LABORATORY OF YALE UNIVERSITY:

CLXXIV.—*Researches on Halogenamino Acids: Iodine Derivatives of Orthotoluidine. The 3-Iodaminobenzoic Acids.* By Henry L. Wheeler and Leonard M. Liddle . . 498

CLXXV.—*Researches on Pyrimidines: Synthesis of 5-Cyanuracil.* By Treat B. Johnson 505

CONTRIBUTIONS FROM THE CHEMICAL LABORATORY OF THE UNIVERSITY OF CINCINNATI:

The Preparation of Hydroxamic Acids from Hydroxylamine Salts of Organic Acids. By Lauder William Jones and Ralph Oesper 515

THE EFFECT OF TEMPERATURE AND DILUTION ON THE CONDUCTIVITY OF ORGANIC ACIDS IN AQUEOUS SOLUTION. By George F. White and Harry C. Jones 520

REPORT.

Recent Progress in Our Knowledge of the Radioactive Elements . 541

REVIEWS.

Das Arbeiten mit farbenempfindlichen Platten 558

Jahrbuch der Elektrochemie und angewandten physikalischen Chemie 558

On the Calculation of Thermochemical Constants 559

Les Densités des Solutions Sucrées à Différentes Températures . 559

Histoire du Développement de la Chimie depuis Lavoisier jusquia nos Jours 559

Einführung in die allgemeine und anorganische Chemie auf elementarer Grundlage 560

The Chemistry and Literature of Beryllium 561

Laboratory Notes on Industrial Water Analysis 562

Index 563

INDEX TO VOL. XLII.

AUTHORS.

ACREE S. F. and *Slagle, E. A.* On the theory of indicators and the reactions of the phthaleins and their salts 115

Anderson, E. On the action of Fehling's solution on galactose... 401

BENNIGSON, F. See *Müller, G.*

Bernthsen, A. and *Mohr, E.* Kurzes Lehrbuch der organischen Chemie (Review) 371

Böttger, W. Qualitative Analyse vom Standpunkte der Ionenlehre (Review) 97

CLARKE, L. See *Jackson, C. L.*

Clemmensen, E. and *Heitman, A. H. C.* Ureides and cyanamides of the oxyfatty acids. 319

Cole, S. W. Exercises in practical physiological chemistry (Review) 179

Cooper, H. C., Shaw, L. I. and *Loomis, N. E.* Lead silicates; thermal analysis of the system PbO–SiO_2 461

Corvisy, A. See *Ladenburg, A.*

DAKIN, H. D. The oxidation of hydroxy derivatives of benzaldehyde, acetophenone and related substances.. 477

Danneel, H. Jahrbuch der Elektrochemie, 1905 (Review)..... 558

Delbridge, T. G. See *Orndorff, W. R.*

Dodgson, J. W. See *Hanson, E. K.*

FERCHLAND, P. Die englischen elektrochemischen Patente. II. (Review) 291

Formánek, J. Untersuchung und Nachweis organischer Farbstoffe auf spektroskopischem Wege (Review)..... 180

GREINACHER, H. Die neueren Fortschritte auf dem Gebiete der Radioaktivität (Review) 291

Guest, H. H. See *Johnson, T. B.*

HABER, F. See *Smith, A.*

Hanson, E. K. and *Dodgson, J. W.* An intermediate course of laboratory work in chemistry (Review)..... 476

Heilman, A. H. C. See *Clemmensen, E.*
Henle, F. W. and *Thiele, J.* Anleitung für das organisch-präparative Prakticum (Review) 373
Henrich, F. Neuere theoretische Anschauungen auf dem Gebiete der organischen Chemie (Review) 372
Herzog, M. See *Robertson, W.*

JACKSON, C. L. and *Clarke, L.* A modification of Scheibler's extractor for use with large quantities of solid 287
Jänecke, E. Gesättigte Salzlösungen vom Standpunkte der Phasenlehre (Review) 374
Jones, H. C. See *Schmidt, M. R.*
" See *White, G. F.*
Jones, L. W. and *Oesper, R.* The preparation of hydroxamic acids from hydroxylamine salts of organic acids 515
Johnson, T. B. Researches on pyrimidines: Synthesis of 5-cyanuracil 505
" and *Guest, H. H.* Researches on amines: synthesis of methylphenylethylamine 340
" " " Researches on pyrimidines: sulphur derivatives of 5-hydroxyuracil: preparation of 5-benzylmercaptouracil and 5-benzylmercaptocytosine 271
" " *Mackenzie, K. G.* Researches on pyrimidines: dimethyl derivatives of 2-aminopyrimidine. Preparation of 2-methylamino-5-methylpyrimidine 353
" See *Wheeler, H. L.*

KASTLE, J. H. On the decomposition of the leucosulphonic acids of rosaniline hydrochloride and crystal-violet in aqueous solution 293
Kohler, E. P. Vinylphenyl ketone and some of its homologues .. 375
König, E. Das Arbeiten mit farbenempfindlichen Platten (Review) 558
Kraemer, H. A text-book of botany and pharmacognosy (Review) 98

LADENBURG, A. and *Corvisy, A.* Histoire du développement de la chimie (Review) 559

Lewis, W. L. On the action of Fehling's solution on malt sugar.. 301
Liddle, L. M. See *Wheeler, H. L.*
Loomis, N. E. See *Cooper, H. C.*

McFARLAND, D. F. See *Wheeler, H. L.*
McKee, R. H. The oxygen ethers of the dialkylureas..... 1
Mackenzie, K. G. See *Johnson, T. B.*
Meyer, R. Jahrbuch der Chemie, 1907 (Review)..... 370
Mohr, E. See *Bernthsen, A.*
Morgan, J. L. R. The elements of physical chemistry (Review).. 96
Müller, G. and *Bennigson, F.* Die chemische Industrie (Review). 475

NEWELL, L. C. A course in inorganic chemistry for colleges (Review)..... 475
Norden, K. Elektrolytische Zähler (Review)..... 182

OESPER, R. See *Jones, L. W.*
Orndorff, W. R. and *Delbridge, T. G.* Tetrachlorgallein and some of its derivatives..... 183
Ostwald, W. Grundriss der allgemeinen Chemie (Review)..... 291

PARSONS, C. L. The chemistry and literature of beryllium (Review)..... 561

RAMSAY, W. Die edlen und die radioaktiven Gase (Review).. 292
" Production of carbon dioxide from solutions of compounds of silicon, zirconium, bismuth and thorium..... 150
Redgrove, H. S. On the calculation of thermochemical constants (Review)..... 559
Richards, E. H. Laboratory notes on industrial water analysis (Review)..... 562
Robertson, W. and *Herzog, M.* Meat and food inspection (Review)..... 374

SCHMIDT, M. R. and *Jones, H. C.* Conductivity and viscosity in mixed solvents containing glycerol..... 37
Segerblom, W. Tables of properties of over 1500 common inorganic substances (Review)..... 476
Shaw, L. I. See *Cooper, H. C.*
Sidersky, D. Les densités des solutions sucrées (Review)..... 559
Slagle, E. A. See *Acree, S. F.*
Smith, A. General chemistry for colleges (Review)..... 98
" *Stern, E.* and *Haber, F.* Einführung in die allgemeine und anorganische Chemie (Review)..... 560

Soddy, F. and *Walter, C. H.* Ion (Review) 181
Stern, E. See *Smith, A.*
Stoddard, J. T. Quantitative experiments in general chemistry (Review) 373
Strong, W. W. Experiments on the radioactivity of erbium, potassium and rubidium compounds 147
" Recent progress in our knowledge of the radioactive elements (Report) 541
Swartz, C. K. Relation between crystalline form and chemical constitution (Report) 158

THIELE, J. See *Henle, F. W.*

VAN'T HOFF, J. H. Die Lagerung der Atome im Raume (Review) 95

WALTER, C. H. See *Soddy, F.*
Wheeler, H. L. and *Johnson, T. B.* Researches on pyrimidines: the preparation of 3-methyl- and 3-benzyluracil 30
" and *Liddle, L. M.* Researches on halogenamino acids; iodine derivatives of *o*-toluidine. The 3-iod-aminobenzoic acids 498
" " " Researches on halogenamino acids: iodine derivatives of *p*-toluidine; 3,5-diiod-4-aminobenzoic acid 441
" " *McFarland, D. F.* Researches on pyrimidines: the action of methyl iodide and of benzyl chloride on 2-oxy-4-methyl-6-methylmercaptopyrimidine 431
" " " Researches on pyrimidines: the preparation of 1,4-dimethyluracil and of the monobenzyl derivatives of 4-methyluracil ... 101
White, G. F. and *Jones, H. C.* The effect of temperature and dilution on the conductivity of organic acids in aqueous solution ... 520
Wiley, H. W. Principles and practice of agricultural analysis. Vol. II (Review) 99

SUBJECTS.

2-ACETAMINO-5-IODBENZOIC acid. *Wheeler* and *Liddle* 503
Acethydroxamic acid. *Jones* and *Oesper* 519

Acetic acid, conductivity of. *White* and *Jones* 528
Acetophenone, benzaldehyde and related substances, oxidation of hydroxy derivatives of. *Dakin* 477
Amines, researches on: Synthesis of methylphenylethylamine. *Johnson* and *Guest* 340
2- and 4-Aminobenzoic acids, conductivity of. *White* and *Jones*. 533
4-Aminobenzoic acid, action of iodine on. *Wheeler* and *Liddle*. 457
2-Amino-5-iodbenzoic acid. *Wheeler* and *Liddle* 503
2-Amino-5-iodtoluene. *Wheeler* and *Liddle* 501
2-Aminopyrimidine, dimethyl derivatives of. *Johnson* and *Mackenzie* 353

BENZALDEHYDE, acetophenone and related substances, oxidation of hydroxy derivatives of. *Dakin* 477
Benzenesulphonemethylphenylethylamine. *Johnson and Guest*.. 349
Benzenesulphonephenylethylamine. *Johnson* and *Guest* 348
Benzenyl-4-amino-3-thiocresol, 448; platinum chloride salt, 448. *Wheeler* and *Liddle* 448
Benzoic acid, conductivity of. *White* and *Jones* 531
Benzoyldiisobutylurea. *McKee* 16
β-Benzoylethanesulphonic acid, 390; sodium salt, 389. *Kohler*.. 390
1-Benzyl-3,4-dimethyluracil. *Wheeler* and *MacFarland* 112
1-Benzyl-2-ethylmercapto-4-methyl-6-oxypyrimidine. *Wheeler* and *McFarland* 108
5-Benzylmercaptocytosine. *Johnson* and *Guest* 281
2-Benzylmercapto-4-methyl-5-benzyl-6-oxypyrimidine. *Wheeler* and *McFarland* 114
5-Benzylmercaptouracil. *Johnson* and *Guest* 279
1- and 3-Benzyl-4-methyluracils. *Wheeler* and *McFarland* 109, 438
Bismuth compounds, carbon dioxide from. *Ramsay* 157
5-Bromcatechol. *Dakin* 489
3-Brom-4-hydroxybenzaldehyde, oxidation of. *Dakin* 491
5-Bromvanillin, oxidation of. *Dakin* 493
n-Butyric acid, conductivity of. *White* and *Jones* 529

CARBON dioxide from compounds of silicon, zirconium, thorium and bismuth. *Ramsay* 150
Catechol from salicylic aldehyde. *Dakin* 488
β-Chlorpropiophenone. *Kohler* 389
Cinnamic acid, conductivity of. *White* and *Jones* 533
Cobalt chloride, conductivity of solutions in mixed solvents containing glycerol, 69; viscosity and fluidity, 89. *Schmidt* and *Jones* 69
Conductivity and viscosity in mixed solvents containing glycerol. *Schmidt* and *Jones* 37

Conductivity of organic acids in aqueous solution, effect of temperature and dilution on. *White* and *Jones*..... 520
Crotonyl chloride. *Kohler*..... 395
Crystal-violet leucosulphonic acid, decomposition of, in aqueous solution. *Kastle*..... 293
Cyanamides and ureides of the hydroxy fatty acids. *Clemmensen* and *Heitman*..... 319
α-Cyan-β-pseudoethylthiourea-acrylpseudoethylthiourea. *Johnson*..... 513
5-Cyanuracil, synthesis of. *Johnson*..... 505

DIALKYLUREAS, oxygen ethers of. *McKee*..... 1
Dibrombutyrophenone. *Kohler*..... 393
α,β-Dibrombutyryl-4-bromphenyl ketone. *Kohler*..... 397
Dibrombutyryl chloride. *Kohler*..... 393
α,β-Dibromethyl-4-bromphenyl ketone. *Kohler*..... 391
3,5-Dibrom-4-hydroxybenzaldehyde, oxidation of. *Dakin*..... 491
Dibrom-4-hydroxydiphenylphthalid and its methyl ester. *Acree* and *Slagle*..... 138
Dibromisovalerophenone. *Kohler*..... 398
Dibromisovaleryl chloride. *Kohler*..... 397
α,β-Dibrompropiophenone. *Kohler*..... 382
3,5-Dichlorcatechol. *Dakin*..... 489
2,6-Dichlor-5-ethoxypyrimidine. *Johnson* and *Guest*..... 284
3,5-Dichlor-4-hydroxybenzaldehyde, oxidation of. *Dakin*..... 490
Diethyl oxalpropionate, stability of sodium salt. *Johnson* and *Mackenzie*..... 367
Diglycolylurea, 326; silver salt, 328. *Clemmensen* and *Heitman*.. 326
2,4- and 2,5-Dihydroxyacetophenones, oxidation of. *Dakin*.... 495
2,4- and 3,4-Dihydroxybenzaldehydes, oxidation of. *Dakin*.... 492
Di-α-hydroxybutyrylurea, 331; silver salt, 332. *Clemmensen* and *Heitman*..... 331
Di-α-hydroxyisovalerylurea, 333; calcium-copper and silver salts, 334. *Clemmensen* and *Heitman*..... 333
1,4-Dihydroxy-3-methoxy-5-brombenzene. *Dakin*..... 494
1,4-Dihydroxy-2-nitro-3-methoxybenzene. *Dakin*..... 493
3,5-Diiod-4-acettoluide. *Wheeler* and *Liddle*.....450, 455
3,5-Diiod-4-aminobenzoic acid, 454, 457; ethyl ester, 455; sodium salt, 455. *Wheeler* and *Liddle*..... 454
3,4-Diiodbenzoic acid. *Wheeler* and *Liddle*..... 457
3,5-Diiodbenzoic acid. *Wheeler* and *Liddle*.....457, 505
3,5-Diiod-4-hydroxybenzaldehyde, oxidation of. *Dakin*..... 492
3,5-Diiod-4-hydroxybenzoic acid, 459; methyl ester, 460. *Wheeler* and *Liddle*..... 459
3,5-Diiod-4-methoxybenzoic acid, 461; methyl ester, 461. *Wheeler* and *Liddle*..... 461

2,3-Diiodtoluene. *Wheeler* and *Liddle*..... 452
2,5-Diiodtoluene. *Wheeler* and *Liddle*..... 502
3,5-Diiodtoluene. *Wheeler* and *Liddle*..... 450
3,5-Diiod-4-toluidine. *Wheeler* and *Liddle*..... 449
Diisoamylurea, 17; oxalate, 18. *McKee*..... 17
Diisobutylmethylurethane. *McKee*..... 10
Diisobutylurea, 7; oxalate, 8; picrate, 8. *McKee*..... 7
Diisobutylurethane. *McKee*..... 12
Dilactylurea, 328; calcium-copper and silver salts, 330. *Clemmensen* and *Heitman*..... 328
Dilatometer, new. *Acree* and *Slagle*..... 145
1,4-Dimethyl-3-benzyluracil. *Wheeler* and *McFarland*..... 111
1,4-Dimethyl-2-methylmercapto-6-oxypyrimidine. *Wheeler* and *McFarland*..... 105
1,4-Dimethyl-2-oxy-6-methylmercaptopyrimidine(?) *Wheeler* and *McFarland*..... 440
1,4-Dimethyluracil. *Wheeler* and *McFarland*..... 107
1,3-Diphenyl-5-methylpyrazoline. *Kohler*..... 394
Diphenylpyrazoline. *Kohler*..... 387
Dipropylmethylurethane. *McKee*..... 21
Dipropylurethane. *McKee*..... 22
2,6-Dithio-5-ethoxypyrimidine. *Johnson* and *Guest*..... 285

ERBIUM compounds, radioactivity of. *Strong*..... 147
Errata..... 374, 588
5-Ethoxydithiouracil. *Johnson* and *Guest*..... 285
β-Ethoxyethyl-4-bromphenyl ketone, 392; phenylhydrazone, 392. *Kohler*..... 392
Ethoxypropiophenone, 388; phenylhydrazone, 388. *Kohler*..... 388
Ethyl α-benzylmercapto-β-hydroxyacrylate. *Johnson* and *Guest*. 278
Ethyl benzylthioglycollate. *Johnson* and *Guest*..... 278
Ethyl α-cyan-β-pseudoethylthiourea-acrylate. *Johnson*..... 510, 511, 512
Ethyl diisoamylisourea, 18; hydrochloride, 19. *McKee*..... 18
Ethyl diisobutylcarbamate. *McKee*..... 12
Ethyl dipropylcarbamate. *McKee*..... 22
Ethyl dipropylisourea. *McKee*..... 22
Ethyl ethoxymethylenecyanacetate, condensation with pseudoethylthiourea. *Johnson*..... 510, 512
Ethyl-4-hydroxyphenyl ketone, oxidation of. *Dakin*..... 496
2-Ethylmercapto-5-benzylmercapto-6-aminopyrimidine. *Johnson* and *Guest*..... 281
2-Ethylmercapto-5-benzylmercapto-6-chlorpyrimidine. *Johnson* and *Guest*..... 280
2-Ethylmercapto-5-benzylmercapto-6-oxypyrimidine. *Johnson* and *Guest*..... 279
2-Ethylmercapto-5-carbethoxy-6-aminopyrimidine. *Johnson*..... 511, 512

2-Ethylmercapto-4-carboxyl-5-methyl-6-oxypyrimidine, 365; behavior on heating, 368; conversion into thymine, 369; ethyl ester, 368. *Johnson* and *Guest* 365
2-Ethylmercapto-5-cyan-6-oxypyrimidine. *Johnson* 511, 513
2-Ethylmercapto-4-methyl-5-benzyl-6-oxypyrimidine. *Wheeler* and *McFarland* 114
2-Ethylmercapto-5-methyl-6-oxypyrimidine. *Johnson* and *Mackenzie* 368
2-Ethylmercapto-6-oxypyrimidine, action of methyl iodide on. *Wheeler* and *Johnson* 36
Ethyl- α-phenoxy-β-hydroxyacrylate, sodium salt of. *Johnson* and *Guest* 285
Extractor, Scheibler's, a modification for use with large quantities of solid. *Jackson* and *Clarke* 287

FLUORESCEIN and its ethyl esters. *Acree* and *Slagle* 130
Formhydroxamic acid. *Jones* and *Oesper* 518

GALACTOSE, action of Fehling's solution on. *Anderson* 401
Gallic acid, conductivity of. *White* and *Jones* 532
Glycerol, conductivity and viscosity in mixed solvents containing. *Schmidt* and *Jones* 37
Glycolylcyanamide. *Clemmensen* and *Heitman* 335
Glycolyl thiocyanate. *Clemmensen* and *Heitman* 336

HALOGENAMINO acids, researches on:
Iodine derivatives of 2-toluidine. The 3-iodaminobenzoic acids. *Wheeler* and *Liddle* 498
Iodine derivatives of 4-toluidine; 3,5-diiod-4-aminobenzoic acid. *Wheeler* and *Liddle* 441
Hydroxamic acids, preparation from hydroxylamine salts of organic acids. *Jones* and *Oesper* 515
Hydroxy derivatives of benzaldehyde, acetophenone and related substances, oxidation of. *Dakin* 477
Hydroxy fatty acids, ureides and cyanamides of. *Clemmensen* and *Heitman* 319
2- and 4-Hydroxyacetophenones, oxidation of. *Dakin* 495
3-Hydroxybenzaldehyde derivatives, oxidation of. *Dakin* 497
4-Hydroxybenzaldehyde, oxidation of. *Dakin* 490
2-Hydroxy-5-brombenzaldehyde, oxidation of. *Dakin* 489
α-Hydroxybutyrylcyanamide. *Clemmensen* and *Heitman* 338
2-Hydroxy-5-chlorbenzaldehyde, oxidation of. *Dakin* 488
2-Hydroxy-3,5-dibrombenzaldehyde, oxidation of. *Dakin* 489
2-Hydroxy-3,5-dichlorbenzaldehyde, oxidation of. *Dakin* 488
4-Hydroxydiphenylphthalid. *Acree* and *Slagle* 137, 143
α-Hydroxyisovalerylcyanamide. *Clemmensen* and *Heitman* 339

Hydroxylamine formate. *Jones* and *Oesper*..... 517
α-Hydroxymethyl-*d*-ribonic acid, 312; brucine salt, 312; calcium salt, 313; phenylhydrazide, 312. *Lewis*..... 312
2-Hydroxy-3-nitrobenzaldehyde, oxidation of. *Dakin*..... 490
2-Hydroxy-5-nitrobenzaldehyde, oxidation of. *Dakin*..... 490
4-Hydroxyphenylethyl ketone, oxidation of. *Dakin*..... 496
5-Hydroxyuracil, sulphur derivatives of. *Johnson* and *Guest*.... 271

INDICATORS, theory of, and the reactions of the phthaleins and their salts. *Acree* and *Slagle*..... 115
2-Iod-3-acetaminobenzoic acid. *Wheeler* and *Liddle*..... 454
3-Iod-4-acetaminobenzoic acid. *Wheeler* and *Liddle*..... 453
3-Iod-4-acetamino-5(?)-nitrobenzene. *Wheeler* and *Liddle*..... 449
2-Iod-3-acettoluide. *Wheeler* and *Liddle*..... 452
3-Iod-4-acettoluide. *Wheeler* and *Liddle*..... 447
3-Iod-4-aminobenzoic acid. *Wheeler* and *Liddle*..... 456
3-Iod-5-aminobenzoic acid. *Wheeler* and *Liddle*..... 504
2-Iod-3-aminotoluene. *Wheeler* and *Liddle*..... 452
3-Iod-4-benztoluide. *Wheeler* and *Liddle*..... 448
3-Iod-5-nitrobenzoic acid *Wheeler* and *Liddle*..... 503
2-Iod-3-nitrotoluene. *Wheeler* and *Liddle*..... 451
3-Iod-4-toluidine, 445; hydrochloride, 446; oxalate, 447. *Wheeler* and *Liddle*..... 445
3-Iod-4-tolylurea. *Wheeler* and *Liddle*..... 447
Isobutenylphenyl ketone, 398; phenylhydrazone, 399. *Kohler*.... 398
Isovanillin, oxidation of. *Dakin*..... 497

LACTYLCYANAMIDE. *Clemmensen* and *Heitman*..... 337
Lactyl thiocyanate. *Clemmensen* and *Heitman*..... 338
Lead silicates: thermal analysis of the system PbO–SiO_2. *Cooper*, *Shaw* and *Loomis*..... 461
Lithium bromide, conductivity of solutions in mixed solvents containing glycerol, 66; viscosity and fluidity, 89. *Schmidt* and *Jones*..... 66

MALONIC acid, conductivity of. *White* and *Jones*..... 530
Malt sugar, action of Fehling's solution on. *Lewis*..... 301
1-Methyl-2-acetamino-5-iodbenzene. *Wheeler* and *Liddle*..... 502
2-Methylamino-4-carboxyl-5-methyl-6-oxypyrimidine, 369; hydrochloride, 370; methylamine salt, 370. *Johnson* and *Mackenzie*..... 369
2-Methylamino-4-methyl-6-chlorpyrimidine, 363; reduction product with zinc, 364. *Johnson* and *Mackenzie*..... 363
2-Methylamino-5-methyl-6-chlorpyrimidine. *Johnson* and *Mackenzie*..... 361
2-Methylamino-4-methyl-6-oxypyrimidine. *Johnson* and *Mackenzie*..... 363

2-Methylamino-5-methyl-6-oxypyrimidine, 359; platinum chloride salt, 361; picrate, 360; sulphate, 360. *Johnson* and *Mackenzie* 359
2-Methylamino-5-methylpyrimidine, 362; hydrochloride, 363; picrate, 363. *Johnson* and *Mackenzie* 362
1-Methyl-2-benzamino-5-iodbenzene. *Wheeler* and *Liddle* 502
Methyl benzoyldiisobutylisourea, 15; action of hydrochloric acid on, 15; hydrochloride, 16. *McKee* 16
4-Methyl-5-benzyluracil. *Wheeler* and *McFarland* 114
Methyl diisoamylisourea, 17; action of hydrochloric acid on, 18; hydrochloride, 17. *McKee* 17
Methyl diisobutylcarbamate. *McKee* 10
Methyl diisobutylisourea, 3; action of benzoyl chloride on, 14; of hydrochloric acid, 8; of water, 12; ferrocyanide, 7; hydrochloride, 6. *McKee* 3
Methyl dimethylisourea, 22; action of water on, 25; stability of, 27; hydrochloride, 26. *McKee* 22
Methyl dipropylcarbamate. *McKee* 21
Methyl dipropylisourea, 20; action of hydrochloric acid on, 21; hydrochloride, 20. *McKee* 20
2-Methylmercapto-5-ethoxy-6-chlorpyrimidine. *Johnson* and *Guest* 282
2-Methylmercapto-5-ethoxy-6-thiopyrimidine. *Johnson* and *Guest* 283
2-Methylmercapto-4-methyl-6-chlorpyrimidine. *Wheeler* and *McFarland* 435
2-Methylmercapto-4-methyl-6-thiopyrimidine. *Wheeler* and *McFarland* 435
Methylphenylethylamine, 349; acid oxalate, 351; hydrochloride, 350; platinum chloride salt, 351; picrate, 351; picrolonate, 351. *Johnson* and *Guest* 349
1,1-Methylphenylethyl-2-α-naphthylurea. *Johnson* and *Guest* .. 352
1,1-Methylphenylethyl-2-phenylthiourea. *Johnson* and *Guest* ... 352
1,1-Methylphenylethyl-2-phenylurea. *Johnson* and *Guest* 352
1,1-Methylphenylethylurea. *Johnson* and *Guest* 352
4-Methyl-6-thiouracil. *Wheeler* and *McFarland* 437
3-Methyluracil. *Wheeler* and *Johnson* 35
4-Methyluracil, monobenzyl derivatives of, 101; action of benzyl chloride on, 110. *Wheeler* and *McFarland* 101

3-NITRO-4-HYDROXYBENZALDEHYDE, oxidation of. *Dakin* 491
2- and 5-Nitrovanillins, oxidation of. *Dakin* 492

OBITUARY:
Samuel William Johnson 474

Organic acids in aqueous solution, effect of temperature and dilution on conductivity of. *White* and *Jones*..... 520
2-Oxy-3-benzyl-6-methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 35
2-Oxy-3,4-dimethyl-6-methylmercaptopyrimidine. *Wheeler* and *McFarland*..... 439
2-Oxy-6-methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 34
2 - Oxy - 4 - methyl - 6 - metadinitrophenylmercaptopyrimidine. *Wheeler* and *McFarland*..... 440
2 - Oxy - 3 - methyl - 6 -,methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 34
2-Oxy-4-methyl-6-methylmercaptopyrimidine, action of methyl iodide and benzyl chloride on. *Wheeler* and *McFarland*.... 431
2 - Oxy - 4 - methyl - 6 - orthonitrobenzylmercaptopyrimidine. *Wheeler* and *McFarland*..... 440

PHENOLPHTHALEIN, dilatometer measurements with solutions of. *Acree* and *Slagle*..... 141
Phenolphthalin. *Acree* and *Slagle*..... 135
5-Phenoxyuracil. *Johnson* and *Guest*..... 286
Phenylacetic acid, conductivity of. *White* and *Jones*..... 529
1-Phenyl-3-bromphenyl-5-methylpyrazoline. *Kohler*..... 397
Phenylethylamine, 346; hydriodide, 347. *Johnson* and *Guest*... 346
1-Phenylethyl-2-α-naphthylurea. *Johnson* and *Guest*..... 348
β-Phenylisovalerophenone, 400; oximes, 400; phenylhydrazone, 400. *Kohler*..... 400
Phthaleins and their salts, reactions of, and the theory of indicators. *Acree* and *Slagle*..... 115
2-Phthalic acid, conductivity of. *White* and *Jones*..... 531
Potassium compounds, radioactivity of. *Strong*..... 147
Potassium iodide, conductivity of solutions in mixed solvents containing glycerol, 73; viscosity and fluidity, 89. *Schmidt* and *Jones*..... 73
Propenylbromphenyl ketone. *Kohler*..... 396
Propenylphenyl ketone. *Kohler*..... 393
Propionic acid, conductivity of. *White* and *Jones*..... 528
Pyrimidines, researches on:
Action of methyl iodide and of benzyl chloride on 2-oxy-4-methyl-6-methylmercaptopyrimidine. *Wheeler* and *McFarland*..... 431
Dimethyl derivatives of 2-methylaminopyrimidine. The preparation of 2-methylamino-5-methylpyrimidine. *Johnson* and *Mackenzie*..... 353
Preparation of 1,4-dimethyluracil and of the monobenzyl derivatives of 4-methyluracil. *Wheeler* and *McFarland*... 101

Preparation of 3-methyl- and 3-benzyluracil. *Wheeler* and *Johnson* 30
Sulphur derivatives of 5-hydroxyuracil: preparation of 5-benzylmercaptouracil and 5-benzylmercaptocytosine. *Johnson* and *Guest* 271
Synthesis of 5-cyanuracil. *Johnson* 505

RADIOACTIVITY of potassium, erbium and rubidium compounds. *Strong* 147
Reports:
Recent progress in our knowledge of the radioactive elements. *Strong* 541
Relation between crystalline form and chemical constitution. *Swartz* 158
Resacetophenone, and its methyl and ethyl ethers, oxidation of. *Dakin* 495
Reviews:
Agricultural analysis, principles and practice of. *Wiley* 99
Allgemeine und anorganische Chemie, Einführung in die. *Smith, Stern* and *Haber* 560
Allgemeinen Chemie, Grundriss der. *Ostwald* 291
Beryllium, the chemistry and literature of. *Parsons* 561
Botany and pharmacognosy, a text-book of. *Kraemer* 98
Chemie, Jahrbuch der, 1907. *Meyer* 370
Chemische Industrie, die. *Müller* and *Bennigson* 475
Edlen und die radioaktiven Gase, die. *Ramsay* 292
Elektrochemie, Jahrbuch der, 1905. *Danneel* 558
Elektrolytische Zähler. *Norden* 182
Englischen elektrochemischen Patente, die. II. *Ferchland.* 291
Farbenempfindlichen Platten, das Arbeiten mit. *König* 558
General chemistry for colleges. *Smith* 98
Gesättigte Salzlösungen vom Standpunkte der Phasenlehre. *Jänecke* 374
Histoire du développement de la chimie. *Ladenburg* and *Corvisy* 559
Inorganic chemistry for colleges, a course of. *Newell* 475
Ion. *Soddy* and *Walter* 181
Laboratory work in chemistry, an intermediate course of. *Hanson* and *Dodgson* 476
Lagerung der Atome im Raume, die. *Van't Hoff* 95
Meat and food inspection. *Robertson* and *Herzog* 374
Neuere theoretische Anschauungen auf dem Gebiete der organischen Chemie. *Henrich* 372
Organischen Chemie, kurzes Lehrbuch der. *Bernthsen* and *Mohr* 371

Organischer Farbstoffe, Untersuchung und Nachweis, auf spektroskopischem Wege. *Formánek* 180
Organisch-präparative Prakticum, Anleitung für das. *Henle* and *Thiele* 373
Physical chemistry, the elements of. *Morgan* 96
Physiological chemistry, exercises in practical. *Cole* 179
Properties of over 1500 common inorganic substances, tables of. *Segerblom* 476
Qualitative Analyse vom Standpunkte der Ionenlehre. *Böttger* 97
Quantitative experiments in general chemistry. *Stoddard* .. 373
Radioaktivität, die neueren Fortschritte auf dem Gebiete der. *Greinacher* 291
Sucrées, densités des solutions. *Sidersky* 559
Thermochemical constants, on the calculation of. *Redgrove* 559
Water analysis, laboratory notes on industrial. *Richards* ... 562
Rosaniline hydrochloride leucosulphonic acid, decomposition of, in aqueous solution. *Kastle* 293
Rubidium compounds, radioactivity of. *Strong* 147

SALICYLIC acid, conductivity of. *White* and *Jones* 532
Salicylic aldehyde, oxidation of. *Dakin* 486, 497
Scheibler's extractor, a modification for use with large quantities of solid. *Jackson* and *Clarke* 287
Silicon compounds, carbon dioxide from. *Ramsay* 157
Succinic acid, conductivity of. *White* and *Jones* 530
Sulphanilic acid, conductivity of. *White* and *Jones* 534

TETRABROMPHENOLPHTHALEIN and its ethyl ester. *Acree* and *Slagle* 136
Tetrachlorgallein, 207; barium salt, 224; hydrate, 220; hydrochloride, 212; lead salt, 221; potassium salt, 217; sodium salt, 213. *Orndorff* and *Delbridge* 207
Tetrachlorgallein dimethyl ether diacetate. *Orndorff* and *Delbridge* 252
Tetrachlorgallein ethyl ester. *Orndorff* and *Delbridge* 243
Tetrachlorgallein methyl ester, 236; hydrochloride, 242. *Orndorff* and *Delbridge* 236
Tetrachlorgallein tetracetate. *Orndorff* and *Delbridge* 226
Tetrachlorgallein tetramethyl ether. *Orndorff* and *Delbridge* ... 249
Tetrachlorgallein tetraphenylcarbamate. *Orndorff* and *Delbridge*. 235
Tetrachlorgallein trimethyl ether, 244; acetate, 248; ammonium and sodium salts, 246; hydrochloride, 247. *Orndorff* and *Delbridge* 244
Tetrachlorgallin tetracetate, 229; silver salt, 232. *Orndorff* and *Delbridge* 229

2-Thio-5-benzylmercapto-6-oxypyrimidine. *Johnson* and *Guest*. 282
2-Thio-4-methyl-5-benzyluracil. *Wheeler* and *McFarland*..... 113
2-Thio-5-phenoxy-6-oxypyrimidine. *Johnson* and *Guest*..... 286
6-Thiouracil. *Wheeler* and *Johnson*..... 33
Thorium compounds, carbon dioxide from. *Ramsay*..... 153
Thymine. *Johnson* and *Mackenzie*..... 369
4-Toluenesulphonephenylethylamine. *Johnson* and *Guest*..... 349
2-Toluidine, iodine derivatives of. *Wheeler* and *Liddle*..... 498
4-Toluidine, iodine derivatives of. *Wheeler* and *Liddle*..... 441
3,4,5-Triiodbenzoic acid, 458; sodium salt, 459. *Wheeler* and *Liddle*..... 458
3,4,5-Triiodtoluene. *Wheeler* and *Liddle*..... 450
Trimethylphenylethylammonium iodide. *Johnson* and *Guest*.... 348

URACIL-5-CARBOXAMIDE. *Johnson*..... 514
Ureides and cyanamides of the hydroxy fatty acids. *Clemmensen* and *Heilman*..... 319

VANILLIN, oxidation of. *Dakin*..... 492
Vinylphenyl ketone and some of its homologues. *Kohler*..... 375
Viscosity and conductivity in mixed solvents containing glycerol. *Schmidt* and *Jones*..... 37

ZIRCONIUM compounds, carbon dioxide from. *Ramsay*..... 156

FORMULAS.

C_1-GROUP.

1 III.

CH_3O_2N. Formhydroxamic acid. *Jones* and *Oesper*..... 518
CH_5O_2N. Hydroxylamine formate. *Jones* and *Oesper*..... 517

C_2-GROUP.

2 II.

$C_2H_4O_2$. Acetic acid. *White* and *Jones*..... 528

2 III.

$C_2H_5O_2N$. Acethydroxamic acid. *Jones* and *Oesper*..... 519

C_3-GROUP.

3 II.

$C_3H_4O_4$. Malonic acid. *White* and *Jones*..... 530
$C_3H_6O_2$. Propionic acid. *White* and *Jones*..... 528
$C_3H_8O_3$. Glycerol. *Schmidt* and *Jones*..... 37

3 III.

$C_3H_4O_2N_2$. Glycolylcyanamide. *Clemmensen* and *Heilman*..... 335

3 IV.

$C_3H_3O_2NS$. Glycolyl thiocyanate. *Clemmensen* and *Heitman*.... 336

C_4-GROUP.

4 II.

$C_4H_6O_4$. Succinic acid. *White* and *Jones*..... 530
$C_4H_8O_2$. *n*-Butyric acid. *White* and *Jones*..... 529

4 III.

C_4H_5OCl. Crotonyl chloride. *Kohler*..... 395
$C_4H_6O_2N_2$. Lactylcyanamide. *Clemmensen* and *Heitman*..... 337
$C_4H_{10}ON_2$. Methyl dimethylimidocarbamate. *McKee*..... 22, 25, 27

4 IV.

$C_4H_4ON_2S$. 2-Oxy-6-thiopyrimidine (6-thiouracil). *Wheeler* and *Johnson*..... 33
$C_4H_5OClBr_2$. α,β-Dibrombutyryl chloride. *Kohler*..... 393
$C_4H_5O_2NS$. Lactyl thiocyanate. *Clemmensen* and *Heitman*..... 338
$C_4H_{11}ON_2Cl$. Methyl dimethylimidocarbamate hydrochloride. *McKee*..... 26

C_5-GROUP.

5 III.

$C_5H_3O_2N_3$. 2,6-Dioxy-5-cyanpyrimidine. *Johnson*..... 514
$C_5H_5O_3N_3$. 2,6-Dioxy-5-carboxamidepyrimidine. *Johnson*..... 514
$C_5H_6O_2N_2$. (1) 2,6-Dioxy-3-methylpyrimidine. *Wheeler* and *Johnson*..... 35
(2) 2,6-Dioxy-4-methylpyrimidine. *Wheeler* and *McFarland*. 110
(3) 2,6-Dioxy-5-methylpyrimidine (thymine). *Johnson* and *Mackenzie*..... 369
$C_5H_8O_2N_2$. α-Hydroxybutyrylcyanamide. *Clemmensen* and *Heitman*..... 338
$C_5H_8O_5N_2$. Diglycolylurea. $Ag_2 + 2.5\ H_2O$ (p. 328). *Clemmensen* and *Heitman*..... 326

5 IV.

$C_5H_6ON_2S$. (1) 2-Oxy-6-methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 34
(2) 2-Oxy-4-methyl-6-thiopyrimidine. *Wheeler* and *McFarland*..... 437
$C_5H_7OClBr_2$. α,β-Dibromisovaleryl chloride. *Kohler*..... 397

C_6-GROUP.

6 II.

$C_6H_6O_2$. 1,2-Dihydroxybenzene (catechol). *Dakin*..... 488
$C_6H_9N_3$. (1) 2-Methylamino-4-methylpyrimidine. $2 + ZnCl_2$. *Johnson* and *Mackenzie*..... 364
(2) 2-Methylamino-5-methylpyrimidine. *Johnson* and *Mackenzie*..... 362

$C_6H_{12}O_6$. Galactose. *Anderson*..... 401
$C_6H_{12}O_7$. α-Hydroxymethyl-*d*-ribonic acid. *Lewis*..... 312

6 III.

$C_6H_4O_2Cl_2$. (1) 1,2-Dihydroxy-3,5-dichlorbenzene. *Dakin*..... 489
(2) 1,4-Dihydroxy-3,5-dichlorbenzene. *Dakin*..... 491
$C_6H_5O_2Br$. 1,2-Dihydroxy-5-brombenzene. *Dakin*..... 489
$C_6H_7O_2N_2$. 1,4-Dimethyl-2,6-dioxypyrimidine. *Wheeler* and *McFarland*..... 107
$C_6H_8N_2S_2$. 2 - Methylmercapto - 4 - methyl - 6 - thiopyrimidine. *Wheeler* and *McFarland*..... 435
$C_6H_8N_2Cl$. (1) 2-Methylamino-4-methyl-6-chlorpyrimidine. *Johnson* and *Mackenzie*..... 363
(2) 2-Methylamino-5 - methyl - 6 - chlorpyrimidine. *Johnson* and *Mackenzie*..... 361
$C_6H_9ON_3$. (1) 2-Methylamino-4-methyl-6-oxypyrimidine. *Johnson* and *Mackenzie*..... 363
(2) 2 - Methylamino - 5 - methyl - 6 - oxypyrimidine. + H_2O. *Johnson* and *Mackenzie*..... 359
$C_6H_{10}O_2N_2$. α-Hydroxyisovalerylcyanamide. *Clemmensen* and *Heitman*..... 339
$C_6H_{10}N_3Cl$. 2-Methylamino - 5 - methylpyrimidine hydrochloride. + H_2O. *Johnson* and *Mackenzie*..... 363

6 IV.

$C_6H_6ON_2Cl_2$. 2,6 - Dichlor - 5 - ethoxypyrimidine. *Johnson* and *Guest*..... 284
$C_6H_7O_3NS$. 4-Aminobenzenesulphonic acid (sulphanilic acid). *White* and *Jones*..... 534
$C_6H_7N_2ClS$. 2 - Methylmercapto - 4 - methyl - 6 - chlorpyrimidine. *Wheeler* and *McFarland*..... 435
$C_6H_8ON_2S$. (1) 2 - Ethylmercapto - 6 - oxypyrimidine. *Wheeler* and *Johnson*..... 36
(2) 2-Oxy-3-methyl-6-methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 34
(3) 2-Oxy-4-methyl-6-methylmercaptopyrimidine. *Wheeler* and *McFarland*..... 437
$C_6H_8ON_2S_2$. 2,6-Dithio-5-ethoxypyrimidine. *Johnson* and *Guest*. 285
$C_6H_{10}ON_2Cl$. 2-Methylamino-5-methyl-6-oxypyrimidine hydrochloride. 2 + $PtCl_4$. *Johnson* and *Mackenzie*..... 361
$C_6H_{11}O_5N_2S$. 2-Methylamino-5-methyl-6-oxypyrimidine sulphate. *Johnson* and *Mackenzie*..... 360

C_7-GROUP.

7 II.

$C_7H_5I_3$. 1-Methyl-3,4,5-triiodbenzene. *Wheeler* and *Liddle*..... 450

$C_7H_6O_2$. (1) Benzoic acid. *White* and *Jones* 531
(2) 2-Hydroxybenzaldehyde (salicylic aldehyde). *Dakin* ... 486, 497
(3) 4-Hydroxybenzaldehyde. *Dakin* 490
$C_7H_6O_3$. (1) 2,4-Dihydroxybenzaldehyde. *Dakin* 492
(2) 3,4-Dihydroxybenzaldehyde. *Dakin* 492
(3) 2-Hydroxybenzoic acid (salicylic acid). *White* and *Jones* 532
$C_7H_6O_5$. 3,4,5-Trihydroxybenzoic acid (gallic acid). *White* and *Jones* 532
$C_7H_6I_2$. (1) 1-Methyl-2,3-diiodbenzene. *Wheeler* and *Liddle* ... 452
(2) 1-Methyl-2,5-diiodbenzene. *Wheeler* and *Liddle* 502
(3) 1-Methyl-3,5-diiodbenzene. *Wheeler* and *Liddle* 450

7 III.

$C_7H_5O_2I_3$. 3,4,5-Triiodbenzoic acid. Na + 2.5 H_2O (p. 459). *Wheeler* and *Liddle* 458
$C_7H_4O_3Cl_2$. (1) 3,5-Dichlor-4-hydroxybenzaldehyde. *Dakin* 490
(2) 2-Hydroxy-3,5-dichlorbenzaldehyde. *Dakin* 488
$C_7H_4O_2Br_2$. (1) 2-Hydroxy-3,5-dibrombenzaldehyde. *Dakin* 489
(2) 3,5-Dibrom-4-hydroxybenzaldehyde. *Dakin* 491
$C_7H_4O_2I_2$. (1) 3,4-Diiodbenzoic acid. *Wheeler* and *Liddle* 457
(2) 3,5-Diiodbenzoic acid. *Wheeler* and *Liddle* 458, 505
(3) 3,5-Diiod-4-hydroxybenzaldehyde. *Dakin* 492
$C_7H_4O_3I_2$. 3,5-Diiod-4-hydroxybenzoic acid. *Wheeler* and *Liddle*. 459
$C_7H_5O_2Cl$. 2-Hydroxy-5-chlorbenzaldehyde. *Dakin* 488
$C_7H_5O_2Br$. (1) 3-Brom-4-hydroxybenzaldehyde. *Dakin* 491
(2) 2-Hydroxy-5-brombenzaldehyde. *Dakin* 489
$C_7H_5O_4N$. (1) 2-Hydroxy-3-nitrobenzaldehyde. *Dakin* 490
(2) 2-Hydroxy-5-nitrobenzaldehyde. *Dakin* 490
(3) 3-Nitro-4-hydroxybenzaldehyde. *Dakin* 491
$C_7H_7O_2N$. (1) 2-Aminobenzoic acid. *White* and *Jones* 533
(2) 4-Aminobenzoic acid. *Wheeler* and *Liddle* 457
White and *Jones* 534
$C_7H_7O_3Br$. 1,4-Dihydroxy-3-methoxy-5-brombenzene. *Dakin* ... 494
$C_7H_7O_5N$. 1,4-Dihydroxy-2-nitro-3-methoxybenzene. *Dakin* 493
$C_7H_7NI_2$. 1-Methyl-3,5-diiod-4-aminobenzene. *Wheeler* and *Liddle* 449
C_7H_8NI. (1) 1-Methyl-2-amino-5-iodbenzene. *Wheeler* and *Liddle* 501
(2) 1-Methyl-2-iod-3-aminobenzene. *Wheeler* and *Liddle* 452
(3) 1-Methyl-3-iod-4-aminobenzene. *Wheeler* and *Liddle* 445
$C_7H_9O_3N_3$. 2-Methylamino-4-carboxyl-5-methyl-6-oxypyrimidine. *Johnson* and *Mackenzie* 369
$C_7H_{12}O_4N_2$. Dilactylurea. Ag_2 + 1.5 H_2O (p. 330). CaCu (p. 330). *Clemmensen* and *Heitman* 328

7 IV.

$C_7H_6O_4NI$ 3-Iod-5-nitrobenzoic acid. *Wheeler* and *Liddle*..... 503
$C_7H_5O_2N_2I$. 3,5-Diiod-4-aminobenzoic acid. Na + $5H_2O$ (p. 455). *Wheeler* and *Liddle*..... 454, 457
$C_7H_6O_2NI$. (1) 2-Amino-5-iodbenzoic acid. *Wheeler* and *Liddle*. 503
(2) 3-Iod-4-aminobenzoic acid. *Wheeler* and *Liddle*..... 456
(3) 3-Iod-5-aminobenzoic acid. *Wheeler* and *Liddle*..... 504
(4) 1-Methyl-2-iod-3-nitrobenzene. *Wheeler* and *Liddle*.... 451
$C_7H_7ON_3S$. 2-Ethylmercapto-5-cyan-6-oxypyrimidine. *Johnson* 511, 513
C_7H_8NCl. 1 - Methyl - 3 - iod - 4 - aminobenzene hydrochloride. *Wheeler* and *Liddle*..... 446
$C_7H_{10}ON_2S$. (1) 1,4 - Dimethyl - 2 - methylmercapto - 6 - oxypyrimidine. *Wheeler* and *McFarland*..... 105
(2) 1,4 - Dimethyl - 2 - oxy - 6 - methylmercaptopyrimidine(?) *Wheeler* and *McFarland*..... 440
(3) 2 - Ethylmercapto - 5 - methyl - 6 - oxypyrimidine. *Johnson* and *Mackenzie*..... 369
(4) 2 - Oxy - 3,4 - dimethyl - 6 - methylmercaptopyrimidine. *Wheeler* and *McFarland*..... 439
$C_7H_{10}ON_2S_2$. 2 - Methylmercapto - 5 - ethoxy - 6 - thiopyrimidine. *Johnson* and *Guest*..... 283
$C_7H_{10}O_3N_3Cl$. 2 - Methylamino - 4 - carboxyl - 5 - methyl - 6 - oxypyrimidine hydrochloride. *Johnson* and *Mackenzie*..... 370

7 V.

$C_7H_9ON_2ClS$. 2 - Methylmercapto - 5 - ethoxy - 6 - chlorpyrimidine. *Johnson* and *Guest*..... 282

C_8-GROUP.

8 II.

$C_8H_6O_4$. 2-Phthalic acid. *White* and *Jones*..... 531
$C_8H_8O_2$. (1) Methyl-2-hydroxyphenyl ketone. *Dakin*..... 495
(2) Methyl-4-hydroxyphenyl ketone. *Dakin*..... 495
(3) Phenylacetic acid. *White* and *Jones*..... 529
$C_8H_8O_3$. (1) 3-Hydroxy-4-methoxybenzaldehyde (isovanillin). *Dakin*..... 497
(2) 3-Methoxy-4-hydroxybenzaldehyde (vanillin). *Dakin*.. 492
(3) Methyl-2,4-dihydroxyphenyl ketone (resacetophenone). *Dakin*..... 495
(4) Methyl-2,5-dihydroxyphenyl ketone. *Dakin*..... 496
$C_8H_{11}N$. Phenylethylamine. *Johnson* and *Guest*..... 346

8 III

$C_8H_6O_3I_2$. (1) 3,5-Diiod-4-methoxybenzoic acid. *Wheeler* and *Liddle*..... 461
(2) Methyl 3,5-diiod-4-hydroxybenzoate. *Wheeler* and *Liddle* 460

$C_8H_7O_3Br$. 3-Methoxy-4-hydroxy-5-brombenzaldehyde (bromvanillin). *Dakin*..... 493
$C_8H_7O_5N$. (1) 3 - Methoxy - 4 - hydroxy - 5 - nitrobenzaldehyde. *Dakin*..... 492
(2) 2-Nitro-3-methoxy-4-hydroxybenzaldehyde. *Dakin*.... 493

8 IV.

$C_8H_{11}O_3N$. Ethyl ethoxymethylenecyanacetate. *Johnson*..... 510, 512
$C_8H_{12}NI$. Phenylethylamine hydriodide. *Johnson* and *Guest*.... 347
$C_8H_{14}O_3N_4$. 2 - Methylamino - 4 - carboxyl - 5 - methyl - 6 - oxypyrimidine methylamine salt. *Johnson* and *Mackenzie*..... 370
$C_8H_{17}O_3N$. Methyl dipropylcarbamate. *McKee*..... 21
$C_8H_{18}ON_2$. Methyl dipropylimidocarbamate. *McKee*..... 20, 21
$C_8H_9ON_4I$. 1-Methyl-3-iod-4-aminophenylurea. *Wheeler* and *Liddle*..... 447
$C_8H_{10}O_3N_2S$. 2 - Ethylmercapto - 4 - carboxyl - 5 - methyl - 6 - oxypyrimidine. *Johnson* and *Mackenzie*..... 365, 368, 369
$C_8H_{19}ON_2Cl$. Methyl dipropylimidocarbamate hydrochloride. *McKee*..... 20

C_9-GROUP.

9 II.

C_9H_8O. Vinylphenyl ketone. *Kohler*..... 386
$C_9H_8O_2$. β-Phenylacrylic acid (cinnamic acid). *White* and *Jones*..... 533
$C_9H_{10}O_2$. Ethyl-4-hydroxyphenyl ketone. *Dakin*..... 496
$C_9H_{10}O_3$. Methyl-2-hydroxy-4-methoxyphenyl ketone. *Dakin*.. 496
$C_9H_{13}N$. Methylphenylethylamine. *Johnson* and *Guest*..... 349
$C_9H_{14}O_5$. Diethyl oxalpropionate. Na. *Johnson* and *Mackenzie*. 367

9 III.

$C_9H_7OBr_3$. α,β-Dibromethyl-4-bromphenyl ketone. *Kohler*.... 391
$C_9H_8OBr_2$. α,β-Dibrompropylphenyl ketone. *Kohler*..... 382
$C_9H_8O_3I_2$. Methyl 3,5-diiod-4-methoxybenzoate. *Wheeler* and *Liddle*..... 461
C_9H_9OCl. β-Chlorpropylphenyl ketone. *Kohler*..... 389
$C_9H_{10}O_4S$. β-Benzoylethanesulphonic acid. Na + H_2O (p. 389). *Kohler*..... 390
$C_9H_{14}NCl$. Methylphenylethylamine hydrochloride. + $2H_2O$. 2 + $PtCl_4$ (p. 351). *Johnson* and *Guest*..... 350
$C_9H_{16}O_4N_2$. Di-α-hydroxybutyrylurea. Ag_2 + 1.5H_2O (p. 332). *Clemmensen* and *Heitman*..... 331
$C_9H_{19}O_2N$. Ethyl dipropylcarbamate. *McKee*..... 22
$C_9H_{20}ON_2$. (1) Diisobutylurea. *McKee*..... 7
(2) Ethyl dipropylimidocarbamate. *McKee*..... 22

9 IV.

$C_9H_8O_3NI$. (1) 2-Acetamino-5-iodbenzoic acid. *Wheeler* and *Liddle*..... 503
(2) 2-Iod-3-acetaminobenzoic acid. *Wheeler* and *Liddle*..... 454
(3) 3-Iod-4-acetaminobenzoic acid. *Wheeler* and *Liddle*..... 453
$C_9H_9ONI_2$. 1-Methyl-3,5-diiod-4-acetaminobenzene. *Wheeler* and *Liddle*..... 450, 455
$C_9H_9O_2NI_2$. Ethyl 3,5-diiod-4-aminobenzoate. *Wheeler* and *Liddle*..... 455
$C_9H_{10}ONI$. (1) 1-Methyl-2-acetamino-5-iodbenzene. *Wheeler* and *Liddle*..... 502
(2) 1-Methyl-2-iod-3-acetaminobenzene. *Wheeler* and *Liddle*. 452
(3) 1-Methyl-3-iod-4-acetaminobenzene. *Wheeler* and *Liddle*..... 447
$C_9H_{10}ON_3Cl$. 2 - Methylamino - 5 - methyl - 6 - oxypyrimidine hydrochloride. 2 + $PtCl_4$. *Johnson* and *Guest*..... 361
$C_9H_{10}O_3N_2I$. 1 - Methyl - 3 - iod - 4 - acetamino-5(?)-nitrobenzene. *Wheeler* and *Liddle*..... 449
$C_9H_{11}O_6N_3S$. 2 - Methylamino - 5 - methyl - 6 - oxypyrimidine sulphate. *Johnson* and *Mackenzie*..... 360
$C_9H_{15}O_2N_3S$. (1) Ethyl α - cyan - β - pseudoethylthiourea - acrylate. *Johnson*..... 510, 511, 512
(2) 2 - Ethylmercapto - 5 - carbethoxy - 6 - aminopyrimidine. *Johnson*..... 511, 512

C_{10}-GROUP.

10 II.

$C_{10}H_{10}O$. Propenylphenyl ketone. *Kohler*..... 393
$C_{10}H_{12}O_3$. Methyl-2-hydroxy-4-ethoxyphenyl ketone. *Dakin*.... 496

10 III.

$C_{10}H_8O_2N_2$. 2,6-Dioxy-5-phenoxypyrimidine. *Johnson* and *Guest*.. 286
$C_{10}H_9OBr$. Propenylbromphenyl ketone. *Kohler*..... 396
$C_{10}H_8OBr_2$. α,β-Dibrombutyryl-4-bromphenyl ketone. *Kohler*. 397
$C_{10}H_{10}OBr_2$. α,β-Dibrombutyrylphenyl ketone. *Kohler*..... 393
$C_{10}H_{14}ON_2$. 1,1-Methylphenylethylurea. *Johnson* and *Guest*..... 352
$C_{10}H_{21}O_3N$. Methyl diisobutylcarbamate. *McKee*..... 10
$C_{10}H_{22}ON_2$. Methyl diisobutylimidocarbamate. *McKee*..... 3, 8, 12, 14

10 IV.

$C_{10}H_8O_2N_2S$. 2-Thio-5-phenoxy-6-oxypyrimidine. *Johnson* and *Guest*..... 286
$C_{10}H_{14}O_3N_2S$. 2 - Ethylmercapto - 4 - carboxyl - 5 - methyl - 6 - oxypyrimidine ethyl ester. *Johnson* and *Mackenzie*..... 368
$C_{10}H_{15}ON_3S_2$. α - Cyan - β - pseudoethylthiourea-acrylpseudoethylthiourea. *Johnson*..... 513
$C_{10}H_{22}ON_2Cl$. Methyl diisobutylisourea hydrochloride. *McKee*.. 6

C_{11}-GROUP.

11 II.

$C_{11}H_{12}O$. Isobutenylphenyl ketone. *Kohler* 398
$C_{11}H_{12}O_4$. Ethyl α-phenoxy-β-hydroxyacrylate. Na. *Johnson* and *Guest* 285
$C_{11}H_{14}O_2$. Ethoxypropylphenyl ketone. *Kohler* 388

11 III.

$C_{11}H_{12}OBr_2$. α,β-Dibromisovalerylphenyl ketone. *Kohler* 398
$C_{11}H_{13}O_2Br$. β-Ethoxyethyl-4-bromphenyl ketone. *Kohler* 392
$C_{11}H_{14}O_2S$. Ethyl benzylthioglycollate. *Johnson* and *Guest* 278
$C_{11}H_{15}O_4N$. Methylphenylethylamine acid oxalate. *Johnson* and *Guest* 351
$C_{11}H_{18}NI$. Trimethylphenylethylammonium iodide. *Johnson* and *Guest* 348
$C_{11}H_{20}O_3N_2$. Di-α-hydroxyisovalerylurea. $Ag_2 + 2.5H_2O$ (p. 334). CaCu (p. 334). *Clemmensen* and *Heitman* 333
$C_{11}H_{23}O_2N$. Ethyl diisobutylcarbamate. *McKee* 12
$C_{11}H_{24}ON_2$. Diisoamylurea. *McKee* 17

11 IV.

$C_{11}H_8O_5N_4S$. 2-Oxy-4-methyl-6-metadinitrophenylmercapto-pyrimidine. *Wheeler* and *McFarland* 440
$C_{11}H_{10}ON_2S_2$. 2-Thio-5-benzylmercapto-6-oxypyrimidine. *Johnson* and *Guest* 282
$C_{11}H_{10}O_2N_2S$. 2,6-Dioxy-5-benzylmercaptopyrimidine. *Johnson* and *Guest* 279
$C_{11}H_{11}ON_3S$. 2-Oxy-5-benzylmercapto-6-aminopyrimidine. *Johnson* and *Guest* 281

C_{12}-GROUP.

12 II.

$C_{12}H_{22}O_{11}$. Malt sugar. $+ H_2O$. *Lewis* 301

12 III.

$C_{12}H_{12}O_2N_2$. (1) 1-Benzyl-2,6-dioxy-4-methylpyrimidine. *Wheeler* and *McFarland* 109, 438
(2) 2,6-Dioxy-3-benzyl-4-methylpyrimidine. *Wheeler* and *McFarland* 110, 439
(3) 2,6-Dioxy-4-methyl-5-benzylpyrimidine. *Wheeler* and *McFarland* 114
$C_{12}H_{14}O_3S$. Ethyl α-benzylmercapto-β-hydroxyacrylate. *Johnson* and *Guest* 278
$C_{12}H_{26}ON_2$. Methyl diisoamylimidocarbamate. *McKee* 17, 18

12 IV.

$C_{12}H_{11}O_3N_3S$. 2 - Oxy - 4 - methyl - 6 - orthonitrobenzylmercapto-pyrimidine. *Wheeler* and *McFarland*..... 440
$C_{12}H_{12}ON_2S$. (1) 2 - Oxy - 3 - benzyl - 6 - methylmercaptopyrimidine. *Wheeler* and *Johnson*..... 35
(2) 2-Thio-4-methyl-5-benzyl-6-oxypyrimidine. *Wheeler* and *McFarland*..... 113
$C_{12}H_{27}ON_2Cl$. Methyl diisoamylimidocarbamate hydrochloride. *McKee*..... 17

C_{13}-GROUP.
13 III.

$C_{13}H_{14}O_2N_2$. (1) 1 - Benzyl - 2,6 - dioxy - 3,4 - dimethylpyrimidine. *Wheeler* and *McFarland*..... 112
(2) 1,4-Dimethyl-2,6-dioxy-3-benzylpyrimidine. *Wheeler* and *McFarland*..... 111
$C_{13}H_{15}N_3S_2$. 2 - Ethylmercapto - 5 - benzylmercapto - 6 - amino-pyrimidine. *Johnson* and *Guest*..... 281
$C_{13}H_{28}ON_2$. Ethyl diisoamylimidocarbamate. *McKee*..... 18

13 IV.

$C_{13}H_{13}N_2ClS_2$. 2 - Ethylmercapto - 5 - benzylmercapto - 6 - chlor - pyrimidine. *Johnson* and *Guest*..... 280
$C_{13}H_{14}ON_2S_2$. 2 - Ethylmercapto - 5 - benzylmercapto - 6 - oxy - pyrimidine. *Johnson* and *Guest*..... 279
$C_{13}H_{29}ON_2Cl$. Ethyl diisoamylimidocarbamate hydrochloride. *McKee*..... 19

C_{14}-GROUP.
14 III.

$C_{14}H_{11}NS$. Benzenyl-2-amino-5-methylthiophenol. *Wheeler* and *Liddle*..... 448

14 IV.

$C_{14}H_{12}ONI$. (1) 1-Methyl-2-benzamino-5-iodbenzene. *Wheeler* and *Liddle*..... 502
(2) 1-Methyl-3-iod-4-benzaminobenzene. *Wheeler* and *Liddle*..... 448
$C_{14}H_{12}NClS$. Benzenyl - 2 - amino - 5 - methylthiophenol hydrochloride. $2 + PtCl_4 + H_2O$. *Wheeler* and *Liddle*..... 448
$C_{14}H_{13}O_2NS$. Benzenesulphonephenylethylamine. *Johnson* and *Guest*..... 348
$C_{14}H_{10}ON_2S$. (1) 1 - Benzyl-2-ethylmercapto - 6 - oxypyrimidine. *Wheeler* and *McFarland*..... 108
(2) 2 - Ethylmercapto - 4 - methyl-5-benzyl-6-oxy-pyrimidine. *Wheeler* and *McFarland*..... 114

C_{15}-GROUP.

15 II.

$C_{15}H_{14}N_2$. Diphenylpyrazoline. *Kohler*..... 387

15 III.

$C_{15}H_{16}O_7N_4$. Methylphenylethylamine picrate. *Johnson* and *Guest*..... 351
$C_{15}H_{29}O_4N_5$. Diisobutylurea picrate. *McKee*..... 8

15 IV.

$C_{15}H_{17}O_2NS$. (1) Benzenesulphonemethylphenylethylamine. *Johnson* and *Guest*..... 349
(2) 4-Methylbenzenesulphonephenylethylamine. *Johnson* and *Guest*..... 349

C_{16}-GROUP.

16 II.

$C_{16}H_{16}N_2$. 1,3-Diphenyl-5-methylpyrazoline. *Kohler*..... 394

16 III.

$C_{16}H_{15}N_2Br$. 1 - Phenyl - 3 - bromphenyl - 5 - methylpyrazoline. *Kohler*..... 397
$C_{16}H_{15}ON_2$. 1,1-Methylphenylethyl-2-phenylurea. *Johnson* and *Guest*..... 352
$C_{16}H_{18}N_2S$. 1,1-Methylphenylethyl-2-phenylthiourea. *Johnson* and *Guest*..... 352
$C_{16}H_{24}O_2N_2$. Benzoyldiisobutylurea. *McKee*..... 16

16 IV.

$C_{16}H_{15}O_4N_2I_2$. 1-Methyl-3-iod-4-aminobenzene oxalate. *Wheeler* and *Liddle*..... 447
$C_{16}H_{20}ON_8Fe$. Methyl diisobutylisourea ferrocyanide. *McKee*. 7

C_{17}-GROUP.

17 II.

$C_{17}H_{18}O$. β-Phenylisovalerylphenyl ketone. *Kohler*..... 400
$C_{17}H_{18}N_2$. Isobutenylphenyl ketone phenylhydrazone. *Kohler*.. 399

17 III.

$C_{17}H_{19}ON$. β-Phenylisovalerylphenyl ketone oximes. *Kohler*... 400
$C_{17}H_{20}ON_2$. Ethoxypropylphenyl ketone phenylhydrazone. *Kohler*..... 388
$C_{17}H_{26}O_2N_2$. Methyl benzoyldiisobutylisourea. *McKee*..... 15

17 IV.

$C_{17}H_{19}ON_2Br$. β-Ethoxyethyl-4-bromphenyl ketone phenylhydrazone. *Kohler* 392
$C_{17}H_{27}O_2N_2Cl$. Methyl benzoyldiisobutylisourea hydrochloride. *McKee* 16

C_{18}-GROUP.

18 III.

$C_{18}H_{21}O_7N_9$. 2-Methylamino-5-methylpyrimidine picrate. *Johnson* and *Mackenzie* 363
$C_{18}H_{21}O_9N_9$. 2 - Methylamino - 5 - methyl - 6 - oxypyrimidine picrate. + H_2O. *Johnson* and *Guest* 360

C_{19}-GROUP.

19 III.

$C_{19}H_{18}ON_2$. 1-Phenylethyl-2-α-naphthylurea. *Johnson* and *Guest*. 348
$C_{19}H_{21}O_5N_3$. Methylphenylethylamine picronolate. *Johnson* and *Guest* 351

19 IV.

$C_{19}H_{18}ON_2S$. 2 - Benzylmercapto - 4 - methyl - 5 - benzyl - 6 - oxy - pyrimidine. *Wheeler* and *McFarland* 114

C_{20}-GROUP.

20 II.

$C_{20}H_{12}O_5$. Fluorescein. *Acree* and *Slagle* 130
$C_{20}H_{14}O_3$. 4-Hydroxydiphenylphthalid. *Acree* and *Slagle* 137, 143
$C_{20}H_{14}O_4$. Phenolphthalein. *Acree* and *Slagle* 141
$C_{20}H_{16}O_4$. Phenolphthalin. *Acree* and *Slagle* 135

20 III.

$C_{20}H_8O_7Cl_4$. Tetrachlorgallein. + H_2O (p. 220). Ba + $3H_2O$ (p. 224). K + $4H_2O$ (p. 217). Na + $4H_2O$ (p. 213). *Orndorff* and *Delbridge* 207
$C_{20}H_9O_7Cl_3$. Tetrachlorgallein hydrochloride. *Orndorff* and *Delbridge* 212
$C_{20}H_{12}O_3Br_2$. Dibrom - 4 - hydroxydiphenylphthalid. *Acree* and *Slagle* 138
$C_{20}H_{12}O_4Br_4$. Tetrabromphenolphthalin. *Acree* and *Slagle* 136
$C_{20}H_{20}ON_2$. 1,1 - Methylphenylethyl - 2 - α - naphthylurea. *Johnson* and *Guest* 352
$C_{20}H_{42}O_4N_4$. Diisobutylurea oxalate. *McKee* 8

20 V.

$C_{20}H_{22}O_3N_2ClS$. Rosaniline hydrochloride leucosulphonic acid. *Kastle* 293

C_{21}-GROUP.

21 III.

$C_{21}H_{10}O_7Cl_4$. Tetrachlorgallein methyl ester. *Orndorff* and *Delbridge*..... 236
$C_{21}H_{11}O_7Cl_5$. Tetrachlorgallein methyl ester hydrochloride. *Orndorff* and *Delbridge*..... 242
$C_{21}H_{14}O_5Br_2$. Methyl ester of dibrom-4-hydroxydiphenylphthalid. *Acree* and *Slagle*..... 139

C_{22}-GROUP.

22 II.

$C_{22}H_{16}O_5$. Ethyl esters of fluorescein. Na (p. 132). *Acree* and *Slagle*..... 131

22 III.

$C_{23}H_{12}O_7Cl_4$. Tetrachlorgallein ethyl ester. *Orndorff* and *Delbridge*..... 243
$C_{22}H_{10}O_4Br_4$. Ethyl ester of tetrabromphenolphthalin. *Acree* and *Slagle*..... 137

C_{23}-GROUP.

23 II.

$C_{23}H_{24}N_2$. β-Phenylisovalerylphenyl ketone phenylhydrazone. *Kohler*..... 400

23 III.

$C_{23}H_{14}O_7Cl_4$. Tetrachlorgallein trimethyl ether. Na (p. 246). NH_4 (p. 247). *Orndorff* and *Delbridge*..... 244
$C_{23}H_{15}O_7Cl_5$. Tetrachlorgallein trimethyl ether hydrochloride. *Orndorff* and *Delbridge*..... 247

C_{24}-GROUP.

24 II.

$C_{24}H_{20}O_5$. Diethyl esters of fluorescein. *Acree* and *Slagle*..... 131

24 III.

$C_{24}H_{16}O_7Cl_4$. Tetrachlorgallein tetramethyl ether. *Orndorff* and *Delbridge*..... 249
$C_{24}H_{50}O_6N_4$. Diisoamylurea oxalate. *McKee*..... 18

24 IV.

$C_{24}H_{10}O_{11}Cl_4Pb_3$. Salt obtained from lead acetate and sodium salt of tetrachlorgallein. *Orndorff* and *Delbridge*..... 221

C_{25}-GROUP.

25 III.

$C_{25}H_{16}O_8Cl_4$. Tetrachlorgallein trimethyl ether acetate. *Orndorff* and *Delbridge*..... 248

25 V.

$C_{25}H_{32}O_3N_2ClS$. Crystal-violet leucosulphonic acid. *Kastle*..... 293

C_{26}-GROUP.

26 III.

$C_{26}H_{16}O_8Cl_4$. Tetrachlorgallein dimethyl ether diacetate. *Orndorff* and *Delbridge*..... 252

C_{28}-GROUP.

28 III.

$C_{28}H_{16}O_{11}Cl_4$. Tetrachlorgallein tetracetate. *Orndorff* and *Delbridge*..... 226

$C_{28}H_{18}O_{11}Cl_4$. Tetrachlorgallin tetracetate. $+ 1.5\ C_2H_6O$. Ag (p. 232). *Orndorff* and *Delbridge*..... 229

C_{48}-GROUP.

48 IV.

$C_{48}H_{28}O_{12}N_4Cl_4$. Tetrachlorgallein tetraphenylcarbamate. *Orndorff* and *Delbridge*..... 235

ERRATA.

Vol. 42, p. 282, l. 14, for $C_{11}H_{10}ON_2S$ read $C_{11}H_{10}ON_2S_2$.

Vol. 42, p. 393, l. 12 from bottom, for $C_{10}H_{11}OBr_3$ read $C_{10}H_{10}OBr_2$.

Vol. 42, p. 400, l. 5 and 23, for β-phenylisobutyrophenone read β-phenylisovalerophenone.

Vol. 42, p. 447, l. 11, for $C_{16}H_{18}O_2N_2I_2$ read $C_{16}H_{18}O_4N_2I_2$.

Vol. 42, p. 449, l. 18, for $C_9H_9O_2N_2I$ read $C_9H_{10}O_3N_2I$.